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Video 6: Standard Deviation

1. In comparing monthly precipitation for Portland, Oregon, and Montreal, Canada, why was comparing the mean monthly precipitation rates insufficient?

Comparing the mean monthly precipitation rates was insufficient because the cities have different climates. Precipitation in Montreal was constant but in Portland it was varied and there were outliers controlling the mean.

2. Why don't we measure spread about the mean by simply averaging $x - \bar{x}$, the deviations of individual data values from their mean?

We cannot simply subtract to find the standard deviations and then take the average, because some standard deviations may be negative. They need to be squared first in order to make them positive.

3. What did the standard deviation of four-week sales data tell you about the two Wahoo's Taco locations, Manhattan Beach and South Coast Plaza?

The standard deviation shows how far sales stray away from the mean. The standard deviation for the restaurant at the beach was much higher than the one at the mall because sales depend on good weather at the beach. At the mall, sales are fairly consistent.

4. Can the standard deviation of a set of observations be $s = -1.5$? Explain

No, because you square the standard deviations making them all positive.

Video 7: Normal Curves

1. Describe the characteristic shape of a normal curve.

A normal curve looks like a bell shape. It is symmetric with one peak.

2. How can you spot the mean of a normal curve?

The mean is at the peak of the bell curve.

3. If one normal curve is low and spread out and another is tall and skinny, which curve has the larger standard deviation?

The curve that is taller and skinnier has the larger standard deviation.

4. Focus on the distribution of arrival times for the Eastern Towhee for Years 1 and 33. Has the mean arrival date in Year 33 increased, decreased or remained the same as the mean in Year 1?

The mean arrival date in Year 33 decreased from Year 1.

5. The mean of the arrival times for the Blackpoll Warbler passing through Manomet in Years 1 and 33 is roughly the same. In Year 33 has the percentage of birds that have arrived by day 56 increased, decreased or remained the same as what it was in Year 1?

In Year 33, the percentage of birds that arrived by day 56 was less than it was in year 1.

Video 8: Normal Calculations

1. What is another name for the Empirical rule?

Another name for the empirical rule is the 68-95-99.7 Rule.

2. How tall must a woman be to join the Boston Beanstalks Club?

A woman must be 5 foot 10 inches for a woman to join the Boston Beanstalks Club.

3. How do you calculate a z-score?

To calculate a z-score you subtract the mean from X (your starting value) and then divide by the standard deviation.

4. Based on z-scores, are eligibility requirements to join the Boston Beanstalks more difficult to meet for men or for women?

Eligibility requirements for the Boston Beanstalks are more difficult for women to meet than men.